

Kinser, Robin D.

From: Elves, Robert G.
Sent: Friday, July 21, 2000 12:10 PM
To: Rustemeier, Klaus; Kinser, Robin D.; 'islesail@rivnet.net'
Cc: Walk, Roger A.
Subject: Cd Determination

Importance: High

For the Total Exposure Study (TES), *Determination Of Cadmium In Blood, Plasma And Urine By Electrothermal Atomic Absorption Spectrophotometry After Isolation Anion-Exchange Chromatography* has been suggested by David P. Peterson, Edmund A. Huff and Maryka H. Bhattacharyya. (Analytical Biochemistry 192, 434-440, 1991). Klaus - I will fax a copy. Don and Robin - If you have fax capability let me know and I will send you a copy as well.

The drawback to the above noted method was the large amount of blood needed, up to 8 ml. Maryka and Ed Cerny at Argonne National Labs have further miniaturized the assay and presented this methodology at SOT this year requiring only 1 ml of biological fluid. With this small sample size the assay remains highly sensitive with a detection limit of 0.02 ug/L. To my knowledge and that of the authors, this is the only methodology available with enough sensitivity to discriminate between non-smokers, light-smokers, and smokers or changes in smokers say from brand switching. Besides sensitivity, the small sample required would also permit time course studies that could not be done routinely with the previous 8 ml sample. Another advantage of the assay is that the first step of adding HCl stabilizes the Cd and kills blood borne pathogens. This would eliminate shipping concerns and interlab variation as all the samples could be sent to one central lab for analysis.

Roger has asked that each of you review this method for possible inclusion in the TES. If we deem that this is the appropriate assay, I am recommending that Maryka be brought into the program as a consultant to teach the lab(s) on the use of the assay. Although the assay is very straight forward, technique, equipment selection, and laboratory controls are extremely important to prevent Cd contamination from other sources. Her lab has been very successful in identifying and eliminating these sources and permitting the full use of the sensitivity that the new methodology provides. I would also recommend that we support her completion of the miniaturization work to permit blood analysis that is important to the TES (Urine has already been validated).

The fax to be sent will include the original paper and the SOT poster abstract for the miniaturized assay. Please review and comment.